

# Patients Attendance for Emergency Dental Services in Mures County

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*In Romania dental health services are provided mainly through user pays private practices and there is a limited reimbursement of dental services from the government. The economic recession lead to substantial lack of insurance coverage for oral health care of low-income population. The aim of this six-year retrospective study was to assess the prevalence of patients requesting public dental emergency care and to determine the characteristics of dental affections for which emergency interventions were requested in Tirgu-Mures, Romania. During the analyzed period, a total number of 38610 patients were treated in the Emergency Dental Office of Mures County Emergency Hospital. Of the total number of treated emergency patients 8017 (20.76%) were children and 30593 (79.25%) were adults. Significantly more adults requested emergency care than children ( $p < 0.0001$ ). Out of the investigated adults 3051 (9.98%) were aged 60 years or over. The high demand for emergency dental care reflects that dental care in private practices is unaffordable to socially disadvantaged patients and also the need for community based public dental care in Tirgu-Mures.*

*Keywords: dental emergency, retrospective study, public dental care, dental affections*

Oral health is part of general health and should not be considered in isolation, because it is part of the individual's health related quality of life [1]. For maintaining oral health status, it is important to attend regular dental visits to oral health care services in order to improve preventive oral health habits, and to ensure prompt diagnosis and management of dental affections, and also screening of oral cancer. Nowadays, dental medicine has become an increasingly more difficult task to perform, since one has to be always up to date with newly developing treatment procedures. As a result, the investigation of the patient has to be done thoroughly and to be well documented, after which a very complex, multidisciplinary and correct treatment should follow [2]. Usage of health care services is measured by the number of visits to oral health care centers per year and by reason of attendance for oral health services [3-5]. Report from Romania show very low utilization of oral health care services and visits are undertaken for symptomatic reasons [6].

In Tirgu-Mures, dental health services are provided mainly through private dental offices and there is a limited reimbursement of dental services by the National Health Insurance Fund for dental ordinations on a monthly, contractual basis. Currently, in Mures County there are 500 private dental offices, 250 being registered in Tirgu-Mures. The number of private dental offices contracted with the National Health Insurance Fund is 86 and 36, respectively. There are three state-financed offices under the Mures County Emergency Hospital authority, namely the Emergency Dental Office, the Oro-Maxillofacial Surgery Clinic and the Ambulatory Dental Treatment Unit, however only the first one is a 24-hour free of charge unit.

From the 1<sup>st</sup> of February 2012, when the Emergency Dental Office of Mures County Emergency Hospital was established in Tirgu-Mures, it is functioning permanently in

the frame of Mobile Emergency Service for Resuscitation and Extrication according to the Ordinance of the Ministry of Health. However, only a few studies dealt with the social and public health aspects of the emergency dental service usage in Tirgu-Mures [2, 7].

During the period of 1<sup>st</sup> of April 2013 and 30<sup>th</sup> of June 2014 the National Health Insurance Fund withdrew the dental service support by virtue of a ministerial decree. Economic recession also resulted in a significant decline in the oral health conditions within the ranks of the low income population. With this background we thought it worthwhile to conduct a comprehensive study over the six-year activity of this dental unit.

The objective of the study was to assess the dynamics of patients' demand regarding the emergency dental health services in the Emergency Dental Office of Mures County Emergency Hospital in Tirgu-Mures, since its establishment. The aim was to assess the prevalence of patients, their demographic distribution and to determine the characteristics of dental affections for which emergency interventions were requested.

## Experimental part

The present six-year study is retrospective and descriptive, based on the analysis of emergency patients' records who visited the Emergency Dental Office of Mures County Emergency Hospital in Tirgu-Mures between 1<sup>st</sup> of February 2012 and 31<sup>th</sup> of December 2017. The patients were registered in the database of the Emergency Dental Office and in the examination registry, after having presented their ID card or their birth certificate. The non-personal data were collected from the examination registries and the main database. Data were classified according to age (child/adult/elderly), gender (male/female), place of origin (urban/rural) and dental diagnosis.

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As the Emergency Dental Office has no possibility to perform dental X-rays, the preliminary emergency diagnosis was based on the internal oral examination and the history of the affection. Based on their diagnosis patients were distributed in eleven groups: coronary lesions and destructions, pulp infections, periodontal infections, dental abscesses, root remnants, post-extraction conditions, pericoronaritis, mixed dentition affections, lesions of the oral mucosa, trauma and dental outbreaks and other affections. Patients with traumas or affections that did not fall in the competence of the dentist who ensure the emergency services were further guided to the Oro-Maxillofacial Surgery Clinic.

The study was approved by the Research Ethics Committee of the University of Medicine and Pharmacy of Tirgu-Mures. Data were analyzed using independent t-tests and chi square tests (GraphPad InStat software), the significance level being set at  $p < 0.05$ .

### Results and discussions

During the analyzed period, a total number of 38610 patients were examined and treated in the Emergency Dental Office of Mures County Emergency Hospital. The yearly distribution of the patients during this period shows the dynamics of emergency dental care attendance (fig. 1). The majority of the examined patients were male 19616 (50.81%) and from the rural area 18994 (50.33%).

After the first year of service the number of patients increased significantly in the next two years, however their number decreased slightly in the last three years. In 2013 the number of patients was significantly higher than in 2012 ( $p = 0.002$ ). This number increased more in 2014 ( $p = 0.001$ ) and in 2015 a slight decrease was observed, however the difference was still significant compared to the first year ( $p = 0.012$ ). The decrease has been emphasized more in 2016 ( $p = 0.142$ ) and in 2017 ( $p = 0.222$ ) compared to 2012 (fig. 1).

The patients' number increased significantly ( $p < 0.05$ ) from one month to the next in the first six months of the first year. In every year the highest values were observed in December due to the winter holidays, except in 2016 when the highest value was observed in January. It was observed that the number of patients who requested an

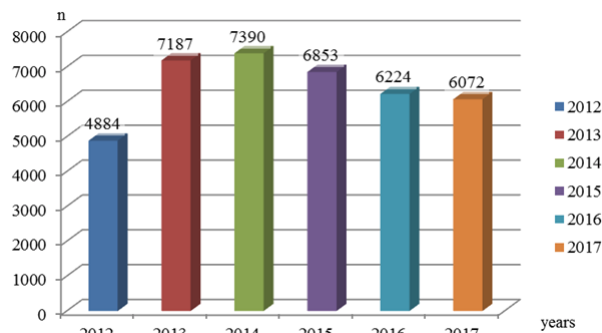


Fig. 1. Prevalence of the patients attending the Emergency Dental Office during the investigated six-year period (n=38610)

emergency intervention per month ranged between a minimum of 150 persons in the first month after the establishment of the Emergency Dental Office and a maximum of 756 in December 2014 (fig. 2). Throughout the six studied years the average of patients who came per day was 18. The maximum number of examined and treated patients in 24 h was 46 patients on the 29<sup>th</sup> of December 2013.

The distribution of patients by age, gender and provenience are presented in figures 3, 4, 5. Statistically significant differences were observed between all the age groups regarding the age distribution of the patients ( $p < 0.0001$ ) (fig. 3).

The gender distribution showed no statistically significant difference ( $p = 0.709$ ) (fig. 4), except in the 60 years or over group, where significantly more males 1732 (56.68%) visited the Emergency Dental Office than females 1324 (43.32%) ( $p = 0.007$ ).

There was no statistically significant difference between the urban and rural provenience of the patients ( $p = 0.887$ ) (fig. 5).

Pulp infections presented the highest prevalence 11707 (30.33%) followed by periodontal infections 8909 (23.08%). The percentage of dental diagnoses observed in the studied six-year period were as follows: coronary lesions and destructions 10.46%, pulp infections 30.33%, periodontal infections 23.08%, dental abscesses 12.75%, root remnants 13.29%, post-extraction conditions 3.65%, pericoronaritis 2.11%, mixed dentition affections 0.93%, lesions of the oral

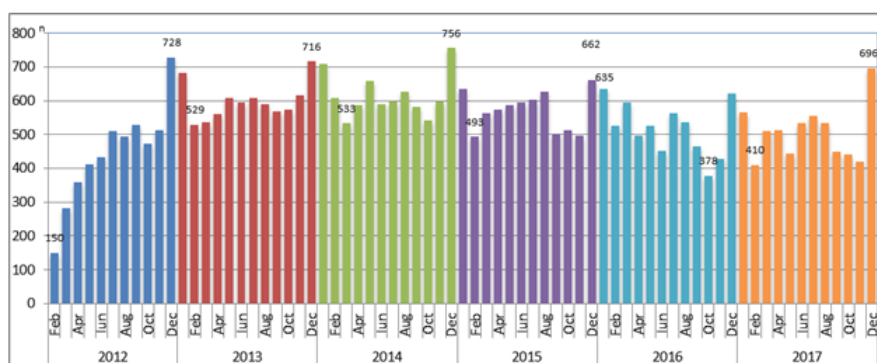


Fig. 2. Distribution of the patients by the months of the year during the six-year period, minimum and maximum number of patients are presented in each year (n=38610)

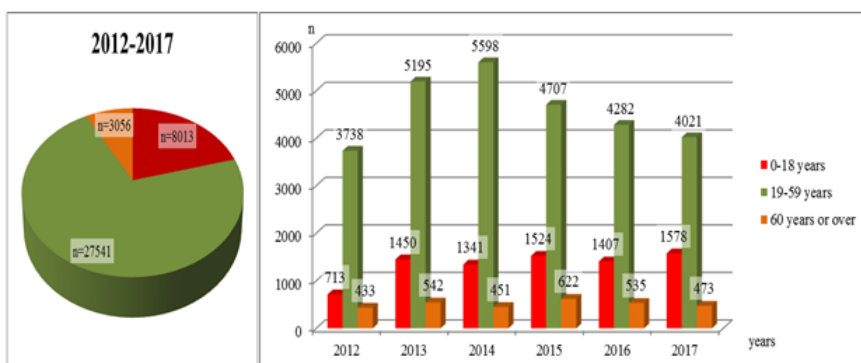


Fig. 3. The yearly age group distribution of children, adults and elderly patients (n=38610)

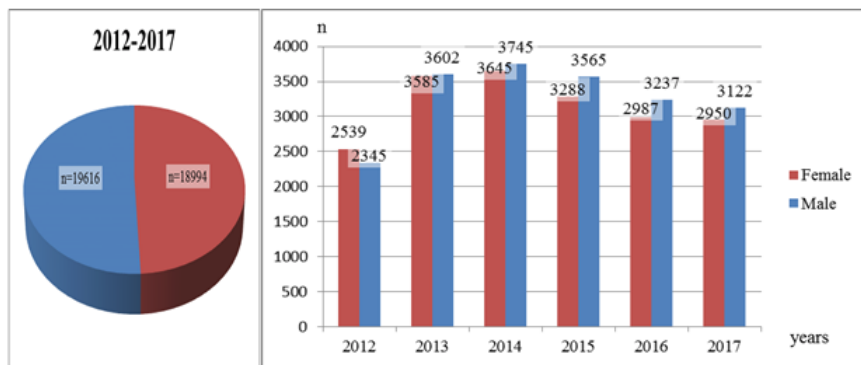


Fig. 4. The yearly gender distribution of patients (n=38610)

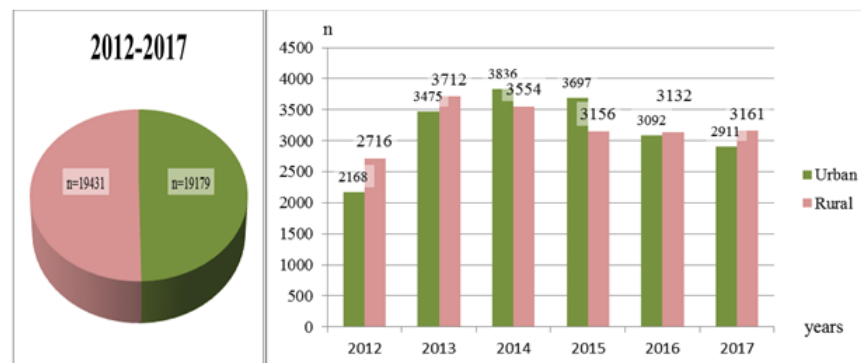


Fig. 5. Distribution of the patients regarding the provenience area during the six-year period (n=38610)

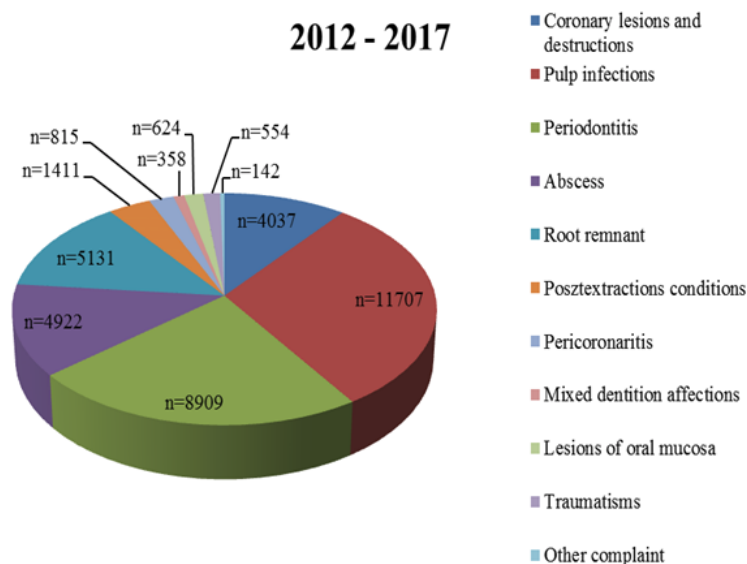


Fig. 6. Distribution of patients based on the dental diagnoses during the six-year period (n=38610)

mucosa 1.62%, trauma and dental outbreaks 1.44%, other affections 0.37% (fig . 6).

The definition of *dental emergency* provided by the American Dental Association includes acute dental pain. In the vast majority of cases, the origin of the pain is endodontic. Several authors have studied the epidemiological aspect of dental emergencies, the socio-economic profiles of the patients involved and the treatment provided in each case [8].

Patients visit the Emergency Dental Office for many reasons, including emergency analgesia, dental treatment costs, drug-seeking behavior, limited access to dental services and dental phobia. Patients with low income may be reliant on public dental services, which typically have long waiting lists. In the setting of facial swelling, patients may also believe they need antibiotics first to settle a toothache or infection before seeking definitive dental care [9-11].

Tooth pain, negligence, and fear of interventions are commonly seen among the Romanian population. More often, these are the main causes for avoiding and postponing necessary dental treatments, with serious

consequences on the dental health state of the individual and the population as a whole [12].

The Romanian health system was financially sustainable despite a long period of transition. A continuous decrease of the number of contributors to health revenue occurred after 2008. This was registered because of changes in the economy structure caused by the economic crisis. The health spending share in 2008 placed Romania on the last place in Europe. The financing of the health sector in Romania is mostly provided by the public sector. The biggest part of the revenue came from direct payments. Three quarters of the public financing of the Romanian health system comes from the National Health Insurance Fund. A critical analysis reveals that Romania decreased the level of the contribution to the social health insurances in the economic crisis period [13].

According to the steady state records in the year 2011, Mures County had a population of 550846, with a higher percentage of female (51.17%), while the male patient presence was higher at the dental emergency office. As far as the place of residence of 134290 inhabitants from Tirgu-Mures, which is 24.37% of the population from the rural area, in our study, 49.67% of the patients was from

Diagnoses of dental affections	0-18 years	19-59 years	60 years or over
Coronary lesions and destructions	1976 (48.95%)	1896 (46.97%)	165 (4.09%)
Pulp infections	2703 (23.09%)	8079 (69.01%)	925 (7.91%)
Periodontitis	876 (9.84%)	7311 (82.07%)	722 (8.11%)
Abscess	1042 (21.17%)	3541 (71.95%)	339 (6.98%)
Root remnant	610 (11.89%)	4022 (78.39%)	499 (9.73%)
Postextraction conditions	26 (1.85%)	1240 (87.88%)	145 (10.28%)
Pericoronaritis	192 (23.56%)	623 (76.45%)	0
Mixed dentition affections	358 (100%)	0	0
Lesions of oral mucosa	91 (14.59%)	336 (53.85%)	197 (31.57%)
Traumatisms	138 (24.91%)	401 (72.39%)	15 (2.71%)
Other complaint	1 (0.71%)	92 (64.79%)	49 (34.51%)

**Table 1**  
THE DISTRIBUTION OF DENTAL  
AFFECTIONS BY AGE GROUPS (n=38610)

urban and 50.33% from the rural population, which suggests that rural dentistry services do not cover the necessities. The Emergency Dental Office from Tirgu-Mures is the single 24 h non-stop dental office in Mures County where anybody may request free dental services.

There was a significant difference among the age groups: the number of adults (19-59 years) was extremely high, 71.33% of the total number of patients, while the number of children was significantly lower (20.75%), as well as the number of elderly (7.91%).

The importance of pediatric dentistry can mainly be seen in adulthood, in cases where dental care systems fail to operate properly. Dental caries untreated in childhood result in such an increased need for prostheses which is difficult to be covered by dental care to be provided for adults [7, 14].

When establishing the therapeutic choice in the dental practice, the dentist will have to take two main aspects into account: the magnitude of the dental intervention and potentially associated system pathology and its compensation level, which can allow or prevent safe dental therapy [15-17]. In addition, the increased prevalence and severity of tooth wear and in population, should be taken into account [18].

A previous study was conducted in order to assess the impact of changes in the reimbursement of dental services on the demand for publicly funded emergency dental care for children provided by the Mures County Emergency Hospital in Tirgu-Mures. Our results highlighted that dental services for children were influenced by changing state insurance schemes. In the period (April 2013-July 2014) when dental care was not reimbursed by the National Healthcare Fund the number of children patients was significantly higher ( $p=0.006$ ). Results suggested that dental care is not affordable to parents from socially disadvantaged groups and this fosters treatment for acute dental pain of children in the public emergency dental office [19].

Oral diseases among elderly patients have a high prevalence, and this is a major public health problem, because screening of oral cancer is important but has a quite limited public attention. Many older adults experience limited access to oral care services because of the limited budget or limited distance access for an oral health care centre [20, 21].

In the studied Emergency Dental Office in Tirgu-Mures, the total number of examined adult patients aged 60 years or over was 9.98%, showing a rise compared to our previous survey which was conducted till September 2016, where 9.4% was the number of elderly people [22].

In the case of patients with medical risks, their assessment and the precautions that need to be taken during treatments are essential. Among risk factors, one can count: the increasing number of elderly patients, an increase in usage and administration of a broad choice of drugs in dental medicine and medicine in general, the patients' stress levels determined by their social and economic conditions, and last, but not least, the lack of sanitary education among the population [23]. Discussing the patient's past dental experiences provides insight into the level of the patient's anxiety [24].

A survey in Timiș County which analyzed the accessibility to dental health care has highlighted that in the rural area, the older ones may have more difficulties in accessing effective interventions to prevent and to control the orodental diseases than the urban individuals. Addressability to dental services is low, 9% declaring their last visit to the dentist 5 years ago and 2% never got to a dentist. In the urban area, patients prefer addressing a private practice or one that collaborates with the National Health Insurance House. Accessibility of dentists in the rural area is very low. The above statements reflect the interrelationship between oral diseases and the ensemble of economical, social and cultural processes, supporting the importance of dental medical care and justifying the social effort to organize them effectively. A smaller number of patients participated in this survey than in the present study. The demographic data and results are similar regarding the urban and rural provenience, however in case of gender distribution percentages were reversed [21].

Our previous two-year study based on diagnosis analysis showed that the majority of the patients attending the Emergency Dental Office had pain associated with a local infection such as pulpitis, acute dental infections and dental abscesses. That study also highlighted that there is an insufficient demand for dental care in the studied population. The results suggest that the number of patients' visits to the Emergency Dental Office could be reduced by increased awareness of oral and dental care, especially in the case of children it should not be the first contact with dental treatment because it can lead to developing anxiety [7].

Regarding the age group, other studies have reported results similar to the findings of the present study in terms of the age of patients who visited emergency dental offices. A peak was observed among patients ranging in age from 31 to 50 years, and this finding was statistically significant. Gibson et al. reported similar results, whereas Mainline et al. and Tiradentes et al. observed that between 20 and 39 years was the most common age of patients who visited emergency dental clinics [25, 26].

In a survey performed in 2008 in Liverpool, at the Manchester University the percentage rates of adult and child patients was very similar to our results. They were investigating emergency dental care patients for a period of nine months. Out of the 1472 patients, 1251 (79%) were adults and 332 (21%) were children [27].

Regarding gender, there was a predominance of male subjects among the total dental emergency patients, although the difference between genders was not statistically significant, however in the case of elderly patients, age-specific analyzes were significantly higher in male 1732 (56.68%) than female 1324 (43.32%) patients.

Other researchers also have reported that women more often seek dental treatment for their painful dental conditions, which may be related to their inherent tendency to care for their health and their lower pain tolerance compared with men [28].

A survey performed in 2016, which studied how dental care services are financed in various countries, highlighted that from among healthcare treatments, dental interventions feature the highest number and require significant expenditures in order to be financed, too, and are highly different according to countries [29].

In our previous two-year retrospective study based on the analysis of patients' emergency dental records from 2012 and 2013, the number of patients was 5567 in the first year, while in the second year 7213 patients were registered in Tirgu-Mures. In the same period in Oradea, in a similar Emergency Dental Office, the number of patients was significantly less 2498 and 2222, respectively [2].

A similar study was conducted in Sibiu with respect to the period of 2011-2015. The average number of patients in an office was 536 patients per month, and the average per day was about 18 patients. These results were in accordance with our results. They also found that the months with very high activity were December, January and August, when other dental practices were closed [30].

Analyzing the preliminary diagnostic data established in emergency care it was observed that the complaints most frequently appeared were pain caused by pulp injuries, followed by periodontitis, root remnants, dental abscesses, coronary lesions due to dental caries. Less frequently were observed the following diagnoses: post-extraction conditions, pericoronaritis, mixed dentition disorders affections, lesions of the oral mucosa, trauma and dental outbreaks and other affections.

In case of children, in schools, they have various programs which are dealing with preventive tooth care, but in case of adults that is not solved yet. While certain cases of dental emergency are unforeseeable or unavoidable, enhancing knowledge and increasing awareness related to proper tooth care at home, as well as implementing systematic check-ups may represent such social initiatives which help decreasing the high incidence rate of emergency visits.

Fear of the pain associated with endodontic treatment remains a problem for patients and dentists. Our culture and the media reinforce the belief that endodontics means pain. The result can be a patient's refusal to have endodontic treatment and opt instead for an extraction. Avoidance of dental treatment due to dental fear and anxiety has been associated with significant deterioration of oral and dental health. Even at the diagnostic stage, severe anxiety may confuse the process [7].

## Conclusions

The great number of patients and the nature of the cases treated at the Dental Office of Mures County Emergency

Hospital in Tirgu-Mures revealed the impact of social inequalities of the population on dental care in this region. The results suggest that dental care is unaffordable to the socially disadvantaged people and this fosters radical treatment of pain in this free of charge 24-hour dental emergency office.

The results suggest also that there is a need for more supportive and preventive measures in case of adults, which would hopefully reduce the frequency of their visits to the Emergency Dental Office.

The high demand for emergency dental services reflects that dental care in user pays private practices is unaffordable to these patients and also there is a lack of public dental care for patients in Tirgu-Mures, Romania.

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